

The opinion in support of the decision being entered today
is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Ex parte
CLAUDE COUTURE, DAVID BERGERON,
and FREDERIC PICARD

Appeal 2007-1897
Application 10/044,846
Technology Center 1700

DECIDED: August 23, 2007

Before TONI R. SCHEINER, NANCY J. LINCK, and RICHARD M.
LEBOVITZ, *Administrative Patent Judges*.

SCHEINER, *Administrative Patent Judge*.

DECISION ON APPEAL

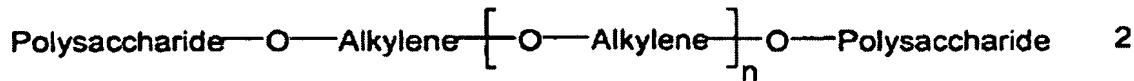
This appeal under 35 U.S.C. § 134 involves claims directed to cross-linked polysaccharides. The claims stand rejected as anticipated by the prior art. We have jurisdiction under 35 U.S.C. § 6(b). We will reverse this rejection.

DISCUSSION

The present invention is directed to a biodegradable absorbent material comprising a “polysaccharide (e.g. starch) cross-linked by an ether linkage consisting of a backbone chain of atoms, said backbone chain of atoms consisting of two terminal ether oxygen atoms” (Spec. 1: 5-9, and 5: 12-13), wherein “said backbone chain of atoms compris[es] at least *one* -O-Alkylene- group, wherein [the] Alkylene [group] comprises one or more -CH₂- groups; [the] Alkylene [group] may more particularly comprise from 1 to 5 -CH₂- groups (e.g. . . . methylene (i.e., -CH₂-), ethylene (i.e. -CH₂CH₂-), n-propylene (i.e. -CH₂CH₂CH₂-), etc . . .)” (Spec. 6: 5-8, emphasis added).

As claimed, however, the cross-linked polysaccharide has at least *two* consecutive -O-Alkylene- groups, as is apparent from representative claim 4, the only independent claim on appeal, which reads as follows:

4. A cross-linked polysaccharide, said cross-linked polysaccharide being a polysaccharide cross-linked by a backbone chain of atoms, said backbone chain of atoms having the formula 2

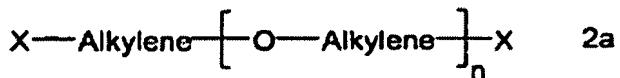


wherein each Alkylene consists of one or more unsubstituted -CH₂- groups, and wherein n is an integer ranging from 1 to 100.

As explained by Appellants, formula 2 “compris[es] a *polyalkylene glycol* backbone, not an alkylene glycol backbone” (Reply Br. 2), because “there is a static O-alkylene group . . . [c]hemically linked to . . . a repeating number of O-alkylenes, (inside the square brackets). These O-alkylene units

are repeated “n” times. Since “n” is an integer ranging from 1 to 100, there is at least one (1) O-alkylene unit inside the brackets” (*id.* at 2-3). Thus, “there are always present in the backbone at least two (2) O-alkylene units” (*id.* at 3).

According to the Specification, the cross-linked polysaccharide of formula 2 is obtained by a “process comprising the step of contacting a polysaccharide (e.g. a starch) with at least one cross-linking agent selected [from] the group consisting of activated polyalkylene glycols of formula 2a



so as to obtain said cross-linked polysaccharide (e.g. cross-linked starch) wherein each Alkylene is as defined above” and “each X group is a group able to react with an alcohol hydroxyl group of said polysaccharide . . . so as to provide an ether oxygen atom link” (Spec. 8: 15 to 9: 8). The activated cross-linking agents of formula 2a may be halogenated, mesylated, tosylated, or triflated polyalkylene glycols. Thus, “[e]ach X may for example be selected from the group consisting of halogen (e.g. Cl, Br, I), -O-Ms, -O-Ts, and -O-Tf, wherein Ms is CH_3SO_2^- , Ts is $p\text{-CH}_3\text{C}_6\text{H}_4\text{SO}_2^-$ and Tf is CF_3SO_2^- ” (*id.* at 9: 14-17, and 10: 20). “Preferred cross-linking agents are 1,5-dichloro-3-oxopentane, 1,8-dichloro-3,6-dioxooctane, 1,11-dich[1]oro-3,6,9-trioxoundecane” (*id.* at 11: 7-8), etc.

ANTICIPATION

Claims 4-9 and 66-82 stand rejected under 35 U.S.C. § 102(b) as anticipated by Qin.¹

According to the Examiner, “Qin teaches a water-swellable modified polysaccharide formed by mixing [a] modified polysaccharide, water, and a crosslinking agent . . . The polysaccharide is carboxyalkyl polysaccharide, such as carboxymethyl cellulose or carboxymethyl starch; and the crosslinking agent is ethylene glycol or butylene glycol” (Answer 3). The Examiner contends that Qin “discloses the same carboxyalkyl polysaccharide, i.e. carboxymethyl starch, and the same crosslinking agent, i.e. ethylene glycol, as presently claimed, [thus,] a product of Qin would inherently be the same as presently claimed” (*id.* at 4).

Appellants contend that the claimed compound of formula 2 is not cross-linked with “a polyol cross-linking agent such as ethylene glycol [or] butylene glycol” (Appeal Br. 4),² but with “*activated polyalkylene glycols*” (*id.*) Appellants assert that “the use of activated *polyalkylene glycols* . . . inherently results in crosslinked polysaccharides that are structurally significantly different from those of Qin” (*id.* at 7).

“[I]n an *ex parte* proceeding to obtain a patent, . . . the Patent Office has the initial burden of coming forward with some sort of evidence tending to disprove novelty.” *In re Wilder*, 429 F.2d 447, 450, 166 USPQ 545, 548 (CCPA 1970). If, however, “the PTO shows sound basis for believing that

¹ U.S. Patent 5,550,189 to Qin et al., issued August 27, 1996.

² All references to the Appeal Brief (“Appeal Br.”) are to Appellants’ Amended Appeal Brief, submitted June 30, 2006.

the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not.” *In re Spada*, 911 F.2d 705, 708, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). Shifting the burden under these circumstances is reasonable because of “the PTO’s inability to manufacture products or to obtain and compare prior art products.” *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977).

The issue raised by this appeal, then, is whether the Examiner has provided a reasonable basis for shifting the burden to Appellants to establish that the prior art and presently claimed cross-linked polysaccharides are structurally different.

Initially, we note that the Examiner’s assertion that the claimed compounds and Qin’s compounds are cross-linked using “the same crosslinking agent, i.e. ethylene glycol” (Answer 4) is simply incorrect. As discussed above, the present Specification teaches that the presently claimed compounds of formula 2 are produced by cross-linking polysaccharides with activated polyalkylene glycols, *not* alkylene glycols like ethylene glycol or butylene glycol (Spec. 8-11).

The distinction is important because Appellants assert that Qin’s use of an alkylene glycol cross-linking agent results in “a *monomer* cross-linked backbone” (Reply Br. 5), which can be schematically represented as: Polysaccharide-O-Alkylene-O-Polysaccharide (*id.*). In addition, Appellants assert that Qin’s “polysaccharide is crosslinked by means of a pair of *ester linkages*” (Appeal Br. 5). In contrast, the presently claimed polysaccharide is cross-linked with an activated polyalkylene glycol, and as a result, has “a *polymer* cross-linked backbone” (Reply Br. 5) “comprising *repeating* and

unsubstituted O-alkylene units" (Appeal Br. 5), schematically represented as: Polysaccharide-O-Alkylene-O-Alkylene-O-Polysaccharide (Reply Br. 4-5). Moreover, the presently claimed cross-linked polysaccharide "comprise[s] *repeating ether* crosslinking units" (Appeal Br. 5).

Having carefully considered both Appellants' and the Examiner's arguments, we find that the Examiner has not established a sound basis for asserting that "a product of Qin would inherently be the same as presently claimed" (Answer 4).

At a minimum, the Examiner has not explained how Qin's alkylene glycol cross-linking agent, which is monomeric in nature, can be used to produce a cross-linked polysaccharide with a *poly*alkylene glycol backbone (a structure clearly required by the claims), rather than an alkylene glycol backbone. Moreover, while not needed for our decision, we further find the Examiner's assertion that Qin's "use of ethylene glycol can also form ether linkages with [] carboxyalkyl polysaccharides" to be unpersuasive, for the reasons advanced in section C2 of Appellants' Reply Brief.

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We find that the Examiner has not established a prima facie case of anticipation. Accordingly, the rejection of claims 4-9 and 66-82 under 35 U.S.C. § 102(b) is reversed.

REVERSED

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